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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/720,262	02/06/2001	Akira Igarashi	201034US0PCT	2400

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EXAMINER

LANGEL, WAYNE A

ART UNIT	PAPER NUMBER
1754	

DATE MAILED: 08/05/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

21

Office Action Summary

Application No.

720262

Applicant(s)

Igarashi et al

Examiner

Langel

Group Art Unit

1754

—The MAILING DATE of this communication appears on the cover sheet beneath the correspondence address—

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, such period shall, by default, expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- ☒ Responsive to communication(s) filed on 7-2-03
- ☐ This action is FINAL.
- ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

Disposition of Claims

- ☒ Claim(s) 9-13, 15-19, 21-24 and 26-33 is/are pending in the application.
- Of the above claim(s) _____ is/are withdrawn from consideration.
- ☐ Claim(s) _____ is/are allowed.
- ☒ Claim(s) 9-13, 15-19, 21-24 and 26-33 is/are rejected.
- ☐ Claim(s) _____ is/are objected to.
- ☐ Claim(s) _____ are subject to restriction or election requirement

Application Papers

- ☐ The proposed drawing correction, filed on _____ is ☐ approved ☐ disapproved.
- ☐ The drawing(s) filed on _____ is/are objected to by the Examiner
- ☐ The specification is objected to by the Examiner.
- ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119 (a)-(d)

- ☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119 (a)-(d).
- ☐ All ☐ Some* ☐ None of the:
- ☐ Certified copies of the priority documents have been received.
- ☐ Certified copies of the priority documents have been received in Application No. _____.
- ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a))

*Certified copies not received: _____

Attachment(s)

- ☒ Information Disclosure Statement(s), PTO-1449, Paper No(s) 5, 8, 9 and 14 ☐ Interview Summary, PTO-413
- ☒ Notice of Reference(s) Cited, PTO-892 ☐ Notice of Informal Patent Application, PTO-152
- ☐ Notice of Draftsperson's Patent Drawing Review, PTO-948 ☐ Other _____

Office Action Summary

Art Unit 1754

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(e) The invention was described in (1) an application for patent, published under Section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

The following is a quotation of 35 U.S.C. § 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 26, 29, 30 and 33 are rejected under 35 U.S.C. 102(e) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Jensen et al. Jensen et al. disclose a catalyst comprising a refractory inorganic oxide upon which may be

Art Unit 1754

dispersed a catalyst which includes metallic platinum, metallic rhenium and cerium. (See column 5, lines 44-61.)

Claims 27 and 28 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Jensen et al. It would be prima facie obvious to employ the platinum and rhenium in an amount of between 0.1% and 10.0% by weight based on the weight of the metal oxide carrier in the catalyst of Jensen et al., since it would be within the skill of one of ordinary skill in the art to determine a suitable or optimum amount of the platinum or rhenium to employ. The dehydrogenation reactor employed in the process of Jensen et al. is considered to constitute a "carbon monoxide removing unit" as recited in applicant's claims.

Claims 26, 27 and 33 are rejected under 35 U.S.C. 102(e) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Zhang. Zhang discloses a catalyst comprising from about 0.1% to about 5% by weight of platinum on a support such as alumina, zirconia or titania, and wherein the catalyst may also contain rhenium. (See column 2, lines 43-67.) The glass reactor employed in the reaction disclosed in Example 4 of Zhang is considered to constitute a "carbon monoxide removing unit" as recited in applicant's claims.

Claim 28 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Zhang. It would be prima facie obvious to employ rhenium in an amount of from 0.1% to 10% by weight based

Art Unit 1754

on the weight of the metal oxide carrier in the catalyst of Zhang, since it would be within the skill of one of ordinary skill in the art to determine a suitable or optimum amount of rhenium to employ.

Claims 9, 10, 13 and 31 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Ou et al. Ou et al. disclose the water gas shift reaction in which the catalyst may include a Group VIII and Group VIIB metal. (See column 5, line 36 - column 7, line 5.) It would be prima facie obvious to employ platinum and rhenium as such metals. Ou et al. further disclose at column 6, lines 46-65 that the catalyst support may be such inert porous supports as alumina, zirconia or titania. Applicant's argument, that there is no suggestion or motivation in Ou et al. to combine platinum with rhenium, is not convincing, since one of ordinary skill in the art would be motivated to combine any of the metals encompassed in the groups disclosed at column 6, lines 46-49 with the platinum in the catalyst of Ou et al. Applicant's argument, that Ou et al. exemplify only a platinum-on-alumina catalyst, and do not exemplify the specific combination of platinum and rhenium in the catalyst, is not convincing, since the teachings of Ou et al. are not limited to only the embodiments which are exemplified in the reference. There is no evidence on record of unexpected results which would emanate from the combination of platinum and

Art Unit 1754

rhenum as a carbon monoxide removal catalyst in the process of Ou et al.

Claims 9-13, 15, 18, 19, 21, 24, 31 and 32 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Clawson et al. Clawson et al. disclose a water-gas shift catalyst which may comprise supported platinum or supported rhenum on a metal oxide carrier such as zirconia, silica or alumina. (See column 5, lines 14-35.) Clawson et al. suggest at column 1, lines 24-35 that the purified hydrogen may be supplied to a fuel cell. The difference between the catalyst disclosed by Clawson et al., and that recited in applicant's claims, is that Clawson et al. do not disclose that the platinum and rhenum should be employed in combination as the catalyst. It would be prima facie obvious to employ both platinum and rhenum as the supported catalyst of Clawson et al., since one of ordinary skill in the art would expect that if platinum and rhenum functioned individually as water-gas shift catalysts, then a combination of platinum and rhenum would also function as such a catalyst. There is no evidence on record of synergism which would result from a combination of platinum and rhenum as the catalyst for the water-gas shift reaction of Clawson et al.

Claims 18 and 24 are rejected under 35 U.S.C. § 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one

Art Unit 1754

skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. There is no "description support" in the original specification for employing a catalyst which has been subjected to water treatment at "80 to 100°C". The phrase --a temperature between-- should be inserted after "at" in line 2 of claims 18 and 24 to avoid this rejection. (See page 16, line 20 of the specification.)

Claims 11, 12, 15-19, 21-24 and 32 are rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 11 is indefinite in reciting method limitations, which would be improper in an apparatus claim. The recitation of "a hydrogen gas" and "which is supplied to a fuel cell" are method limitations. It is well-settled that method limitations are improper in an apparatus claim, since it is not clear whether the method limitations are positive elements of the claim, or whether merely the apparatus structure is required by the claim.

Bellows et al. is made of record for disclosing a method for lowering the carbon monoxide content of a carbon monoxide-containing hydrogen rich gas stream by contacting the gas stream with an adsorbent such as platinum or rhenium.

Art Unit 1754

The other references are made of record for disclosing methods for providing pure hydrogen for use with fuel cells.

The references cited in the International Search Report filed on February 6, 2001 have been considered.

This application apparently discloses allowable subject matter.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Wayne A. Langel whose telephone number is (703) 308-0248. The examiner can normally be reached on Monday through Friday from 8 A.M. to 3:30 P.M.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stanley Silverman, can be reached on (703) 308-3837. The fax phone number for this Group is (703) 305-7718.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 308-2351.

WAL:cdc

July 30, 2003

Wayne A. Langel
WAYNE A. LANGEL
PRIMARY EXAMINER